



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/511,303

10/15/2004

Junichi Nakano

121457

6607

25944

7590

01/04/2007

OLIFF & BERRIDGE, PLC
P.O. BOX 19928
ALEXANDRIA, VA 22320

EXAMINER

ROCCA, JOSEPH M

ART UNIT

PAPER NUMBER

3616

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
--	-----------	---------------

3 MONTHS

01/04/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 10/511,303	Applicant(s) NAKANO ET AL.	
	Examiner Joseph Rocca	Art Unit 3616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☐ Claim(s) 1-25 is/are rejected.
- 7) ☒ Claim(s) 20 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>10/15/2004</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Objections

1. **Claim 20** is objected to because of the following informalities: Claim 20 appears to be unclear based on usage of the unnecessary word of. Appropriate correction is required. Examiner suggests applicant replace "in accordance with a load of pressing the steering column against a vehicle-body-side member and a ..." with "in accordance with a load pressing the steering column against a vehicle-body-side member and a ...", so as to eliminate the use of the word of in the phrase, thereby clarifying the invention.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. **Claim 1-5, 7, and 10** is rejected under 35 U.S.C. 102(b) as being anticipated by White (U.S. 3,392,599). White discloses an impact-absorbing steering column apparatus comprising collision-energy-absorbing means for absorbing secondary collision energy of an occupant in the event of a collision of a vehicle, the collision-energy-absorbing means comprising energy-absorption-load-changing means for changing an absorption load for the secondary collision energy, and the energy-absorption-load-changing means being adapted to change the absorption load in accordance with displacement of a steering column, the displacement changing dependently on a secondary collision of the occupant with a steering system (Figs 7-8).

Art Unit: 3616

With respect to **Claim 3**, the energy-absorption-load-changing means changes the absorption load in accordance with a mode of displacement of the steering column (Figs. 7-8). Additionally, regarding **Claim 4**, the energy-absorption-load-changing means comprises an energy-absorbing member, and engagement means capable of engaging with the energy-absorbing member, and an engagement relation between the energy-absorbing member and the engagement means varies in accordance with a mode of displacement of the steering column, thereby changing the absorption load. Additionally, regarding **Claim 5**, the engagement means is squeezing means for squeezing the energy-absorbing member; the energy-absorbing member has an energy-absorbing portion, which is squeezed by the squeezing means to thereby absorb energy; and an engagement relation between the squeezing means and the energy-absorbing portion varies in accordance with a mode of displacement of the steering column, thereby changing the absorption load.

Regarding **Claim 7**, the engagement means is squeezing means for squeezing the energy-absorbing member; the squeezing means has a plurality of squeezing portions that differ in the quantity of squeeze in squeezing the energy-absorbing member; and an engagement relation between the energy-absorbing member and one of the plurality of squeezing portions is selected in accordance with a mode of displacement of the steering column, thereby changing the absorption load (Elements 48 and 50; Col. 4, Lines 21-31).

Additionally with respect to **Claims 10 and 11**, the steering column comprises the energy-absorbing member, a ball adapted to plastically deform the energy-

Art Unit: 3616

absorbing member, and ball support means for adjusting the quantity of plastic deformation to be effected by the ball; and the ball support means is moved in accordance with a mode of displacement of the steering column in such a manner as to vary an engagement relation between the energy-absorbing member and the ball in accordance with the mode, thereby changing the absorption load. Further as to claim 11 the energy-absorbing member has an elongated groove having a predetermined width; the engagement means is squeezing means assuming a special shape and capable of being displaced in the elongated groove in relation to the energy-absorbing member; and an engagement relation between the special-shape squeezing means and the elongated groove of the energy-absorbing member varies in accordance with a mode of displacement of the steering column, thereby changing the absorption load

4. **Claim 1-3, 4, 12-14, 16, 18, and 23** are rejected under 35 U.S.C. 102(b) as being anticipated by Yamaguchi et al. (U.S. 4,989,898). Yamaguchi discloses an impact-absorbing steering column apparatus comprising collision-energy-absorbing means for absorbing secondary collision energy of an occupant in the event of a collision of a vehicle, the collision-energy-absorbing means comprising energy-absorption-load-changing means for changing an absorption load for the secondary collision energy, and the energy-absorption-load-changing means being adapted to change the absorption load in accordance with displacement of a steering column, the displacement changing dependently on a secondary collision of the occupant with a steering system (Fig. 11).

Regarding **Claim 2**, Yamaguchi discloses an impact-absorbing steering column apparatus comprising collision-energy-absorbing means for absorbing secondary collision energy of an occupant in the event of a collision of a vehicle, the collision-energy-absorbing means comprising energy-absorption-load-changing means for changing an absorption load for the secondary collision energy, and the energy-absorption-load-changing means being adapted to change the absorption load in accordance with displacement of a steering column in a direction intersecting a direction of relative movement of the steering column for absorbing collision energy induced by a secondary collision of the occupant (Col. 4, Lines 20-49).

With respect to **Claim 3**, the energy-absorption-load-changing means changes the absorption load in accordance with a mode of displacement of the steering column (Fig. 11). Additionally, regarding **Claim 4**, the energy-absorption-load-changing means comprises an energy-absorbing member, and engagement means capable of engaging with the energy-absorbing member, and an engagement relation between the energy-absorbing member and the engagement means varies in accordance with a mode of displacement of the steering column, thereby changing the absorption load.

With respect to **Claim 12**, an energy-absorbing member is provided on either a vehicle-body-side member or the steering column, the energy-absorbing member generating an energy absorption load by means of displacement in relation to either the vehicle-body-side member or the steering column on which the energy-absorbing member is provided; the engagement means capable of engaging with the energy-absorbing member is provided on either the vehicle-body-side member or the steering

column on which the energy-absorbing member is not provided; and when the energy-absorbing member is engaged with the engagement means in accordance with a mode of displacement of the steering column, the mode of displacement changing dependently on a secondary collision, the energy-absorbing member incrementally changes the absorption load by means of displacement in relation to either the vehicle-body-side member or the steering column on which the energy-absorbing member is provided (Figs. 7 and 8). Also, inherently, regarding **Claims 13 and 14**, the energy-absorption-load-changing means changes the absorption load in accordance with displacement of the steering column, the displacement changing dependently on the direction of a secondary collision of the occupant with the steering system, at or not at an initial stage of the secondary collision (Figs. 7 and 8).

With respect to **Claim 16**, the energy-absorption-load-changing means increases the absorption load in accordance with such displacement that the steering column tilts upward as a result of a secondary collision of the occupant with the steering system.

As to **Claim 18**, the impact-absorbing means for absorbing a predetermined collision load is provided separately from the collision-energy-absorbing means.

Regarding **Claim 23**, in the event of a secondary collision, the steering column is allowed to be displaced in such a manner as to tilt toward a vehicle-body-side member.

5. **Claim 1-6, 8-9 and 13-15, 17, and 19-21**, are rejected under 35 U.S.C. 102(b) as being anticipated by Matsumoto et al. (U.S. 5,961,146). Matsumoto discloses an impact-absorbing steering column apparatus comprising collision-energy-absorbing means for absorbing secondary collision energy of an occupant in the event of a

collision of a vehicle, the collision-energy-absorbing means comprising energy-absorption-load-changing means for changing an absorption load for the secondary collision energy, and the energy-absorption-load-changing means being adapted to change the absorption load in accordance with displacement of a steering column, the displacement changing dependently on a secondary collision of the occupant with a steering system (Fig. 11). With respect to **Claim 3**, the energy-absorption-load-changing means changes the absorption load in accordance with a mode of displacement of the steering column (Fig. 11).

Additionally, regarding **Claim 4**, the energy-absorption-load-changing means comprises an energy-absorbing member, and engagement means capable of engaging with the energy-absorbing member, and an engagement relation between the energy-absorbing member and the engagement means varies in accordance with a mode of displacement of the steering column, thereby changing the absorption load. Regarding **Claim 5**, Matsumoto further discloses that the engagement means is squeezing means for squeezing the energy-absorbing member; the energy-absorbing member has an energy-absorbing portion, which is squeezed by the squeezing means to thereby absorb energy; and an engagement relation between the squeezing means and the energy-absorbing portion varies in accordance with a mode of displacement of the steering column, thereby changing the absorption load. Also as to **Claim 6**, the engagement means is squeezing means for squeezing the energy-absorbing member; the energy-absorbing member has a plurality of energy-absorbing portions that differ in energy absorption load in relation to the squeezing means; and an engagement relation

Art Unit: 3616

between the squeezing means and one of the plurality of energy-absorbing portions is selected in accordance with a mode of displacement of the steering column, thereby changing the absorption load (See *e.g.*, Figs. 4 and 18).

As to **Claims 8 and 9**, the energy-absorbing member is a linear member capable of engaging with the engagement means; the engagement means is engaged with or is not engaged with the linear member in accordance with a mode of displacement of the steering column, thereby changing the absorption load (Fig. 18, Element 816b).

Regarding Claim 9, the energy-absorbing member is a plurality of linear members capable of engaging with the engagement means; the number of the linear members to be engaged with the engagement means varies in accordance with a mode of displacement of the steering column, thereby changing the absorption load (Fig. 18, Elements 816a and 816b, *see also*, Elements 819a-1, 819ba-2, 819b-1, and 819b-2).

Regarding **Claims 13-15**, Matsumoto also discloses that the energy-absorbing-load changing means of the impact-absorbing steering column apparatus as described above, changes the absorption load in accordance with displacement of the steering column, the displacement changing dependently on the direction of a secondary collision of the occupant with the steering system. Additionally, **[claim 14]** the energy-absorption-load-changing means changes the absorption load in accordance with displacement of the steering column, the displacement changing dependently on the direction of a secondary collision of the occupant with the steering system at an initial stage of the secondary collision. Further **[claim 15]** when a collision load associated with a secondary collision of the occupant with the steering system is equal to or greater

than a predetermined value, the energy-absorption-load-changing means increases the absorption load.

As to **Claim 17**, the energy-absorption-load-changing means changes the absorption load in accordance with a displaced position of the steering column, the displaced position changing dependently on the direction of a secondary collision of the occupant with the steering system.

Similarly, regarding **Claim 19**, the collision-energy-absorbing means selectively produces the absorption load, or changes the magnitude of the absorption load. Also, with respect to **Claim 20**, in accordance with a load pressing the steering column against a vehicle-body-side member and a load of moving the steering column toward the front of the vehicle, the loads changing dependently on a secondary collision of the occupant with the steering system, deformation of an energy-absorbing member provided on either the steering column or the vehicle-body-side member is passively changed by engagement means provided on either the steering column or the vehicle-body-side member on which the energy-absorbing member is not provided, whereby the energy-absorption-load-changing means changes the absorption load (Figs. 4 and 18; Col. 7, Lines 65-68 – Col. 8, Lines 1-13).

6. **Claim 1, 3, 4, 12 and 20-22**, are rejected under 35 U.S.C. 102(b) as being anticipated by Hibino (U.S. 6,224,104). Hibino discloses an impact-absorbing steering column apparatus comprising collision-energy-absorbing means for absorbing secondary collision energy of an occupant in the event of a collision of a vehicle, the collision-energy-absorbing means comprising energy-absorption-load-changing means

for changing an absorption load for the secondary collision energy, and the energy-absorption-load-changing means being adapted to change the absorption load in accordance with displacement of a steering column, the displacement changing dependently on a secondary collision of the occupant with a steering system (Figs 7-8).

With respect to **Claim 3**, the energy-absorption-load-changing means changes the absorption load in accordance with a mode of displacement of the steering column (Figs. 7-8). Additionally, regarding **Claim 4**, the energy-absorption-load-changing means comprises an energy-absorbing member, and engagement means capable of engaging with the energy-absorbing member, and an engagement relation between the energy-absorbing member and the engagement means varies in accordance with a mode of displacement of the steering column, thereby changing the absorption load.

With respect to **Claim 12**, an energy-absorbing member is provided on either a vehicle-body-side member or the steering column, the energy-absorbing member generating an energy absorption load by means of displacement in relation to either the vehicle-body-side member or the steering column on which the energy-absorbing member is provided; the engagement means capable of engaging with the energy-absorbing member is provided on either the vehicle-body-side member or the steering column on which the energy-absorbing member is not provided; and when the energy-absorbing member is engaged with the engagement means in accordance with a mode of displacement of the steering column, the mode of displacement changing dependently on a secondary collision, the energy-absorbing member incrementally changes the absorption load by means of displacement in relation to either the vehicle-

Art Unit: 3616

body-side member or the steering column on which the energy-absorbing member is provided.

Regarding **Claim 20**, in accordance with a load of pressing the steering column against a vehicle-body-side member and a load of moving the steering column toward the front of the vehicle, the loads changing dependently on a secondary collision of the occupant with the steering system, deformation of an energy-absorbing member provided on either the steering column or the vehicle-body-side member is passively changed by engagement means provided on either the steering column or the vehicle-body-side member on which the energy-absorbing member is not provided, whereby the energy-absorption-load-changing means changes the absorption load.

Further as to **Claim 21**, the engagement means is formed on the vehicle-body-side member; the energy-absorbing member is provided on the steering column in opposition to the engagement means and assumes an elongated shape extending along an axis of the steering column; and the engagement means provided on the vehicle-body-side member causes the deformation of the energy-absorbing member provided on the steering column. With respect to **Claim 22**, only when a collision load imposed on the vehicle-body-side member from the steering column is equal to or greater than a predetermined value, abutment between the engagement means and the energy-absorbing member is enabled (Col. 5, Lines 38-49).

7. **Claims 1-2, 16, 18, and 23-25** are rejected under 35 U.S.C. 102(b) as being anticipated by Ben-Rhouma (U.S. 6,234,528). Ben-Rhouma discloses an impact-absorbing steering column apparatus comprising collision-energy-absorbing means for

Art Unit: 3616

absorbing secondary collision energy of an occupant in the event of a collision of a vehicle, the collision-energy-absorbing means comprising energy-absorption-load-changing means for changing an absorption load for the secondary collision energy, and the energy-absorption-load-changing means (Figs. 1-4, Elements 41-43) being adapted to change the absorption load in accordance with displacement of a steering column in a direction intersecting a direction of relative movement of the steering column for absorbing collision energy induced by a secondary collision of the occupant (Fig. 2).

With respect to **Claim 16**, the energy-absorption-load-changing means increases the absorption load in accordance with such displacement that the steering column tilts upward as a result of a secondary collision of the occupant with the steering system.

As to **Claim 18**, the impact-absorbing means for absorbing a predetermined collision load is provided separately from the collision-energy-absorbing means.

Regarding **Claims 23-25**, in the event of a secondary collision, the steering column is allowed to be displaced in such a manner as to tilt toward a vehicle-body-side member. Further, the absorption load is increased with a load of pressing the steering column against a vehicle-body-side member. Additionally, the impact-absorbing means for absorbing a predetermined collision load is provided separately from the collision-energy-absorbing means.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. **Claim 22** is rejected under 35 U.S.C. 103(a) as being unpatentable over Matsumoto et al. (5,961,146) in view of Strubble et al. (U.S. 6,189,929). As discussed above Matsumoto discloses all of the elements of Claim 20. Matsumoto does not specifically disclose that only when a collision load imposed on the vehicle-body-side member from the steering column is equal to or greater than a predetermined value, abutment between the engagement means and the energy-absorbing member is enabled. Strubble discloses, a collapsible steering column wherein only when a collision load imposed on the vehicle-body-side member from the steering column is equal to or greater than a predetermined value, abutment between the engagement means and the energy-absorbing member is enabled (Figs. 1 and 2, Element 70 (note gap between 70 and 50 in Fig. 1 before force is applied)). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the impact absorbing steering column of Matsumoto, such that abutment between the engagement means and the energy-absorbing member is enabled only when a collision load imposed on the vehicle-body-side member from the steering column is equal to or greater than a predetermined value, as disclosed by Strubble, so that the energy absorbing means is only stressed and thereby only fatigued in the event of an actual secondary collision between the occupant and the steering column. By doing so the steering column would be more likely to have a longer and more reliable service life.

Examiner's Note

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

- a. Kachi et al. (U.S. 5,259,818) discloses a steering column, which may be of interest to the applicant.
- b. Ferve et al. (U.S. 5,673,937) discloses a steering column, which may be of interest to the applicant.
- c. Dufour et al. (U.S. 6,183,012) discloses a steering column, which may be of interest to the applicant.
- d. Ulintz (U.S. 6,729,648) discloses a steering column, which may be of interest to the applicant.
- e. Riefe et al. (U.S. App. 2002/0171235 A1) discloses a steering column, which may be of interest to the applicant.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph Rocca whose telephone number is 571-272-5191. The examiner can normally be reached on 8:30 AM to 5:00 PM, Monday through Friday.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Dickson can be reached on 571-272-6669. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 3616

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Joseph Rocca
Patent Examiner
AU-3616



D. GLENN DAYOAN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3600 2/26/a